REMARKS

This is in response to the Office Action mailed September 13, 2006. Reconsideration of this application is respectfully requested in view of this response/amendment.

STATUS OF CLAIMS

Claims 1-22 are pending.

Claim 17 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 18-22 stand rejected under 35 U.S.C. § 112, first paragraph, because these claims depend on claim 17.

Claims 1-22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. 6,889,226 (O'Neil et al.).

OVERVIEW OF CLAIMED INVENTION

The present invention provides for an extensible identification system for nodes in a hierarchy, wherein each node is assigned a concatenation of decimal based values. The identification value uniquely identifies the node, provides an order for the node, and identifies its parent, child, and sibling relationships with other nodes. Also, the IDs assigned can be encoded to be byte comparable. Furthermore, the IDs assigned to nodes need not be modified when changes (adding/deleting a child node or a subtree of nodes) are made in the hierarchy. Additionally, in the event of such a change, the order and relationships between the parent, child, and sibling nodes are retained.

The present invention provides for a robust method for updating a computer-stored hierarchical structure of nodes via a node identification technique, wherein the method comprises

the steps of: (a) receiving an instruction to insert a new node at an insertion point in a computer-stored hierarchical structure; (b) identifying one of, or a combination of the following: a left node ID value closest to the left of the insertion point or a closest right node ID value closest to the right of the insertion point; (c) calculating a new ID value via any of the following steps: concatenating the left node ID value with one or more high key values and a positive value, decreasing last digit of the right node ID value, increasing last digit of left node ID value, decreasing last digit of the right node ID value and concatenating a positive value, or concatenating the left node ID value with one or more zeros and a positive value, wherein the calculated value is greater than ID values of nodes to the left of the insertion point and less than ID values of nodes to the right of the insertion point; and (d) updating the computer-stored hierarchical structure by inserting the new node in the hierarchy and associating the new node with the calculated ID value. As a result of such an implementation, the order, node ID values, and relationships between parent, child, and siblings in the hierarchical structure of nodes remain unchanged with the insertion of new nodes.

The present invention provides a way for assigning IDs to nodes in a hierarchy and provides many advantages, some of which include: (a) the IDs provide a way of ordering nodes in a hierarchy; (b) the IDs describe a node's parent, child, and sibling relationships; (c) the IDs can be encoded such that they are byte comparable; (d) the IDs can be assigned to newly inserted nodes, anywhere in the hierarchy, and still maintain these properties; and (e) the IDs, once assigned, do not have to change even with changes to the hierarchy.

REJECTIONS UNDER 35 U.S.C. § 112

Claim 17 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 18-22 stand rejected under 35 U.S.C. § 112, first paragraph, because these claims depend on claim 17. A clarifying amendment has been made to independent claim 17 without adding new matter. Applicants hereby respectfully request the Examiner to withdraw the 35 U.S.C. § 112, first paragraph, rejection with respect to claims 17-22.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 1-22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. 6,889,226 (O'Neil et al.). Applicants respectfully disagree with the Examiner that the claims are taught by the cited art. The Manual for Patenting Examining Procedure (MPEP) § 2131 clearly sets forth the standard for rejecting a claim under 35 U.S.C. § 102(e). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (MPEP § 2131, quoting Verdegaal Bros. v. Union Oil Co. of California 2 USPQ2d 1051, 1053 (Fed Cir. 1987)). In this case, the cited art (i.e., O'Neil et al.) fails to teach the claimed invention as required by the MPEP.

O'Neil et al.'s Figures 5 and 6 show how data can be inserted (or "careted") into a hierarchical data structure. However, it should be noted that O'Neil's structure is restrictive in the fact that only odd numbers are used as position numbers for nodes. As an example, O'Neil's figure 6 is reproduced below:

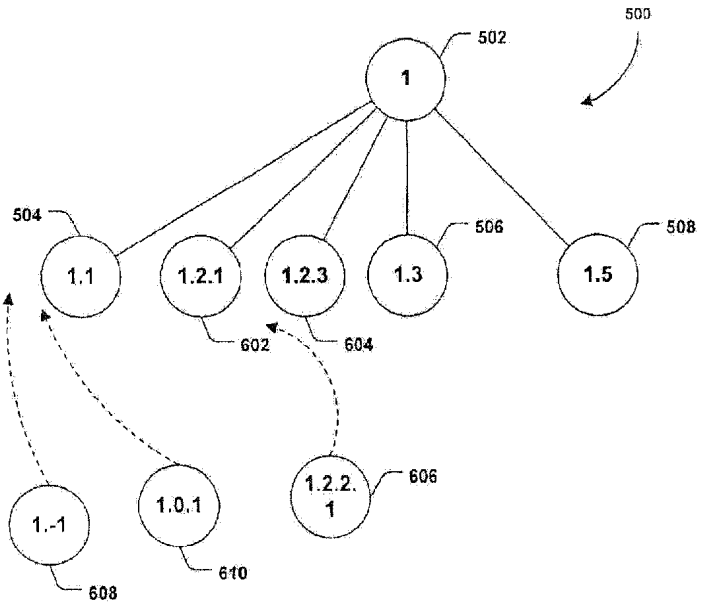

FIG. 6

It can be seen from the above figure that nodes are conveniently numbers with **odd numbers** (1.1, 1.2.1, 1.2.3, 1.3, 1.5, etc.). For example, O'Neil et al, in column 8, lines 36+ state in their own words that:

> "In FIG. 5, a tree 500 is shown, whose hierarchical structure is captured by a set of position numbers. In the example of FIG. 5, node 502 has position number "1", and node 502's child nodes 504, 506, and 508 have position numbers "1.1", "1.3", and "1.5", respectively. It will be observed that only odd numbers are used in the position numbers for nodes 502-508; in a preferred embodiment, ***even numbers are explicitly omitted from the numbering scheme***." (emphasis added)

O'Neil et al. in the same column (i.e., column 8) state the motivation for the explicit use of an odd numbering scheme. The specifically state that **"even numbers" are used in the**

"insertion of nodes". Column 9, lines 14-16 of O'Neil further reiterates that "FIGS. 5 and 6 show the use of even and odd numbers such that **odd numbers are used to represent nodes, and even numbers are used to represent insertion points**." Applicants respectfully contend that O'Neil's scheme is simplistic in that it merely reserves even numbered nodes as insertion points.

By stark contrast, the claimed invention node insertion/deletion scheme is more robust as it is NOT limited by considerations of even and odd nodes. For example, the Examiner is referred to Figure 4 of the application-as-filed which is reproduced below:

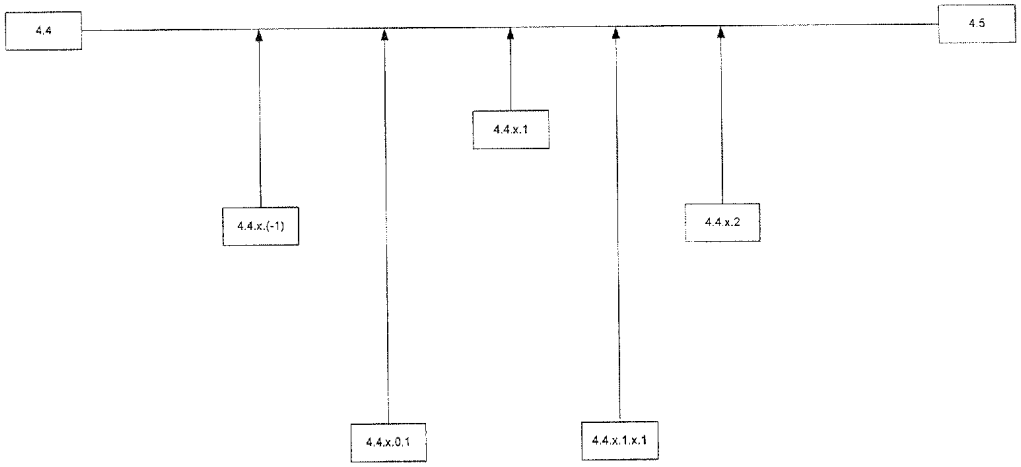

Figure 4

It can be seen from the above figure that the insertion of nodes do not rely on a pre-defined scheme that utilizes odd numbers to represent nodes.

For example, claim 1 of Applicants invention provides for a robust computer-based method for updating a computer-stored hierarchical structure of nodes via a node identification technique, wherein the method comprising the steps of: (a) receiving an instruction to insert a new node at an insertion point in said computer-stored hierarchical structure; (b) identifying one of, or a combination of the following: a left node ID value closest to the left of the insertion point

or a closest right node ID value closest to the right of the insertion point; (c) calculating a new ID value based upon node ID value(s) identified in (b), wherein the calculated value is greater than ID values of nodes to the left of the insertion point and less than ID values of nodes to the right of the insertion point; and (d) updating the computer-stored hierarchical structure by inserting the new node and associating the inserted node with the calculated ID value, wherein order, node ID values, and relationships between parent, child, and siblings in the hierarchical structure of nodes remain unchanged with the insertion of a new node.

O'Neil et al., either in the Examiner's citation or in the reference's entirety, fails to teach identifying a left node ID value closest to the left of said insertion point or a closest right node ID value closest to the right of said insertion point and **calculating a new ID value based upon identified node ID value**, wherein the calculated value greater than ID values of nodes to the left of said insertion point and less than ID values of nodes to the right of said insertion point. As was pointed out above, the Examiner's own citation and O'Neil's own words merely suggest that the calculation of node values are limited to merely inserting an even numbered node and make no mention of a calculation that is based on a closes left or right node ID.

Hence, Applicants respectfully contend that the O'Neil reference can neither anticipate nor render obvious the teachings of Applicants claim 1. The above-mentioned arguments substantially apply to independent claim 9 as it recites substantially the same features in a computer product embodiment.

Further, it should be noted that claim 17 specifically defines the calculation of a new ID value based on: "assigning a new ID value based on a level associated with said insertion point, increasing last digit of said left node ID value, concatenating said left node ID value with one or more zeros and a positive value, decreasing last digit of said right node ID value, concatenating

said left node ID value with one or more high key value, or concatenating said left node ID value with one or more high key values and a positive value".

Such a calculation is more robust than O'Neil's simplistic approach of avoiding even numbered nodes so they can be used during insertion.

Hence, Applicants respectfully contend that the O'Neil reference can neither anticipate nor render obvious the teachings of Applicants claim 17.

If the examiner still feels that that O'Neil's simplistic method of assigning odd numbered nodes and reserving even numbered nodes for insertion anticipates Applicants independent claims 1, 9, and 17 describing a robust method for updating a hierarchical structure of nodes based on left node ID value, right node ID value, concatenation of node ID values with high key values and a positive value, and concatenation of nodes ID values with one or more zeros and a positive value, Applicants respectfully remind the examiner that it is the duty of the examiner to specifically point out each and every limitation of a claim being rejected as per §1.104(c)(2) of Title 37 of the Code of Federal Regulations and section 707 of the M.P.E.P., which explicitly states that "the particular part relied on must be designated" and "the pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified".

The above-mentioned arguments substantially apply to dependent claims 2-8, 10-16, and 18-22 as they inherit all the features of the claim from which they depend.

Applicants, therefore, respectfully request the Examiner to withdraw the rejections with respect to pending claims 1-22 and, hereby, request allowance thereof.

SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicants' presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

As this response has been timely filed, no request for extension of time or associated fee is required. However, the Commissioner is hereby authorized to charge any deficiencies in the fees provided to Deposit Account No. 09-0460.

If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact applicants' representative at the below number.

Respectfully submitted,

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